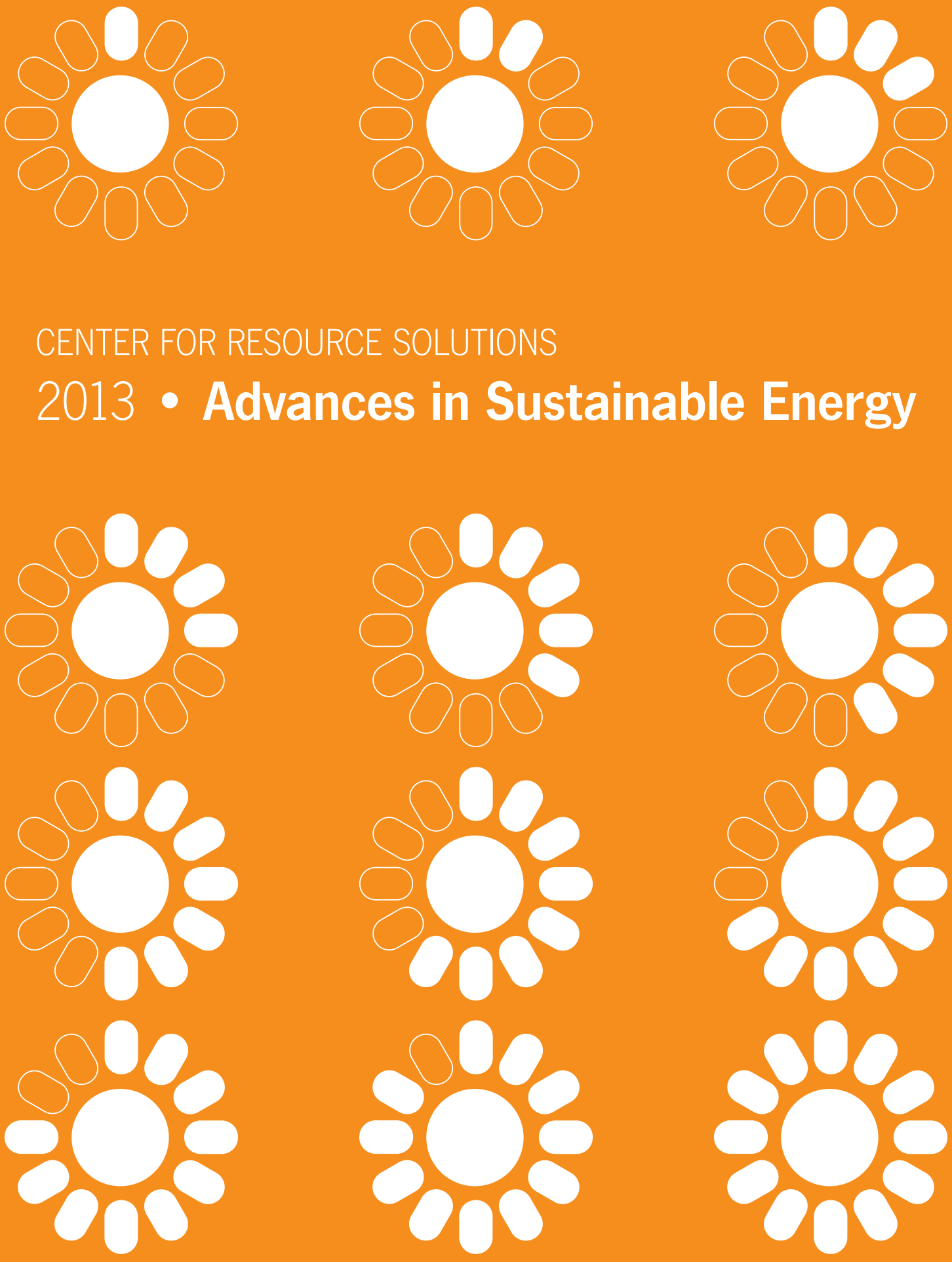

CENTER FOR RESOURCE SOLUTIONS

2013 • Advances in Sustainable Energy

INTRODUCTION

2013 was an exciting year to be working in clean energy. Few industries are growing as fast, in as many places, while creating jobs and encouraging new innovation. We are proud to have played our part in the success of the industry, with nearly half of the installed wind capacity in the U.S. participating in Green-e Energy certified transactions. Across North America, Green-e certified programs and companies are directly increasing the amount of renewable energy generated and used by individuals and organizations and reducing carbon emissions. Our impact goes beyond Green-e, as we continue to help guide policy decisions that accelerate the growth of renewable energy markets, and we are reaching beyond our borders, including to China, Europe, and Latin America, furthering our mission to advance sustainable energy. »

We are pleased to report on our successes this year, as 2013 saw meaningful achievements and unprecedented program growth that we can build on in the coming year. Taking the long view, we understand that however much we have accomplished, we are still just beginning the work that needs to be done to remake our electricity generation infrastructure into a renewable, emissions-free, reliable source of power. But the urgency of this mission has never been greater. At CRS we encourage markets to deliver more clean energy by helping consumers feel confident in supporting clean energy and climate solutions, and providing independent oversight that allows the markets to flourish. With the tremendous amount of work yet required to meet our goals, we look forward to a year that begins with such promise for those of us working for clear skies and clean energy.

Green-e

CRS launched Green-e in 1997 to provide the new retail market for renewable energy with an independent third party that ensured customers were getting the high quality renewable energy they paid for. The program continues to give individuals and organizations the tools and means to increase their use of the renewable energy and reduce carbon emissions, by providing not just consumer protection, but also advocacy, education, and oversight. Together, the three Green-e programs—Green-e Climate, Green-e Energy, and Green-e Marketplace—create tools for the private sector to develop markets for sustainable energy faster than policy can do on its own. Today, Green-e is beginning to expand beyond its North American roots, with increasing interest from organizations in Europe and Latin America. We continue to work on making Green-e a global recognized standard that represents quality in environmental commodities.

Green-e Climate

Green-e Climate serves an important consumer protection role by ensuring the integrity and transparency of sales to individuals and businesses looking to reduce the environmental impact of their flying and driving, heating, and other activities that produce greenhouse gas emissions. Green-e Climate remains the only certification program ensuring the quality of carbon reductions and accuracy and transparency along the entire chain of custody, from the project to the end consumer.

Green-e Climate saw tremendous growth in 2013 (even after reporting a 47% growth in 2012), with a total of 324,414 metric tons CO2e certified—continuing the trend of double-digit annual growth. This brought the program's total to over one million metric tons reduced since its founding in 2008. There were five participating offset providers offering 11 different certified offset options from 14 different offset projects in North and South America and Asia. Green-e Climate welcomed a new participant, San Francisco–based TerraPass, and as well as the American Carbon Registry (ACR) as a new Endorsed Program.

One way that our certification programs extend their reach is by their adoption and integration into other standards. In November 2013 the U.S. Green Building Council updated their

market-leading LEED green-building standard to include Green-e Climate certification of carbon offsets. Green-e Climate is also referenced in the Cradle to Cradle and Living Building Challenge standards, the California Energy Commission's RPS Eligibility Guidebook, The Climate Registry's General Reporting Protocol 2.0, and the Department of Energy's "Greenhouse Gas (GHG) Offsets/Retail GHG Offset Products" online reference.

In April 2013, the Rockefeller Brothers Fund awarded a grant to CRS to support Green-e Climate in developing recommendations to protect carbon markets from fraudulent and deceptive sales and investment activity, a documented problem overseas that could threaten the integrity of U.S. carbon markets.

Green-e Energy

Green-e Energy is North America's largest certification program for renewable energy products sold to consumers and businesses in the voluntary market. Established in 1997, the program certifies utility green-power programs, renewable energy certificate products, and green electricity programs offered by energy service providers in states that offer consumer choice.

Green-e Energy continued to grow at double-digit rates, and in 2013 reported a new milestone—certified residential and commercial retail sales in 2012 represented nearly three-quarters of the entire U.S. retail voluntary market, a total of almost 36 million MWh, and a 29% increase over 2011. Total certified sales, including wholesales, totaled 51.7 million MWh, a 32% increase. By November 2013 there were nearly 300 companies participating in Green-e Energy, selling 130 certified products across the U.S. and Canada. Green-e certified renewable energy sales in the U.S. have increased an average of almost 30% each year since 2008, and now Green-e certifies over 1% of the total U.S. electricity supply. Nearly half of the installed wind capacity in the country is supplying renewable electricity used in Green-e Energy certified transactions.

After a two-year process and in-depth stakeholder consultations, on April 9, 2012 the Green-e Governance Board approved revisions to the Green-e Energy National Standard criteria for hydropower repowering and efficiency upgrades and biomass eligibility, and removed municipal solid waste as an eligible fuel type. The program also completed some "under the hood" improvements, including updates to the web-based verification software supporting the annual audit of program participants. Green-e Energy welcomed a number of new participants into the program in 2013, including Ethical Electric, Just Energy, MidAmerican Energy, Northern Indiana Public Service Company, NYC Clean Energy, and South Jersey Energy.

According to the U.S. Green Building Council, buildings represent 73% of U.S electricity consumption, which makes them an excellent market opportunity for renewable energy. The release of the LEED v4 green-building standard in November 2013 included points for multi-year renewable energy purchases, and included Green-e Energy certification or equivalent in the requirements.

Green-e Marketplace

Green-e Marketplace is a program that works with organizations and businesses of all sizes to help them reduce the impact of their energy use and promote their environmental actions to their stakeholders and employees. Forty-eight companies participated in 2013, offering a total of 500 Green-e certified products in many different sectors, including printing and packaging, health and beauty, food and beverage, home and office, and media and communications.

Green-e Marketplace increased its presence in the printing and packaging industry through the Green-e re:print initiative, in which print customers can include the Green-e certified logo on their finished pieces if both the paper and printing are sourced from certified companies. As a resource-intensive industry, printers and paper companies have long been sensitive to the environmental concerns of their customers. Green-e Marketplace hosted several events around the country to introduce the program to printers, including in Chicago, Seattle, and Austin.

2013 Renewable Energy Markets Conference

CRS held the 18th Renewable Energy Markets conference in Austin, Texas, from September 22–24, 2013. The conference continues to

be indispensable to renewable energy market participants, and this year offered 85 speakers in nearly 30 sessions supported by 26 sponsors and supporting organizations, including the Presenting Sponsor, NextEra Energy Resources, and the Organizing Sponsor, the U.S. EPA. Federal Energy Regulatory Commission Chairman Jon Wellinghoff opened the conference and launched discussions on the technological, policy, and market drivers that will shape renewable energy markets in the coming years.

One of the most exciting trends at the REM conference is the increasing diversity of the types of companies and organizations attending and speaking. This trend reflects the growing importance of clean energy to new sectors of the economy that are increasingly seeing it as a necessary part of doing business. This new demographic also elevated attendee conversations and programming, and facilitated new partnerships among attendees. An attendee survey found 85% of respondents rated the conference as Excellent or Very Good, up 11% from the year before.

2013 Green Power Leadership Awards

The Green Power Leadership Awards are annual awards presented by CRS and the U.S. EPA to recognize the actions of individuals, companies and organizations that are significantly advancing the development and use of renewable electricity sources. This year's awards ceremony was held during the banquet lunch on the first day of the Renewable Energy Markets conference, and honored some of the hardest-working and most innovative companies and individuals in the industry in 2013.

CRS recognized five organizations and one individual with Market Development Awards for their role in building and shaping the market for renewable energy over the previous year.

- **Women of Wind Energy**, Best Green Power Education Outreach Program
- **BMW**, Best Marketing Campaign by a Green Power Purchaser
- **Clean Currents**, Best Marketing Campaign by a Green Power Supplier
- **Pacific Power and Rocky Mountain Power**, Best Marketing Campaign by a Green Power Supplier
- **Jon Wellinghoff**, chairman of the Federal Energy Regulatory Commission, Green Power Leader of the Year

Policy Outreach

An important part of our mission at CRS is to assist lawmakers, regulators, and advocates in developing policy solutions that advance clean energy and reduce carbon emissions. We continually work at state, national, and international levels to ensure that policy decisions are informed with an understanding of environmental commodity markets and promote the accelerated growth of clean energy solutions. In 2013 we provided lawmakers and regulators with critical information on matters impacting renewable energy markets, writing over a dozen comments to trade associations, policy organizations, state public utility commissions, and government agencies. Staff also held a busy speaking schedule, including presentations at American Bar Association conferences, industry and regulatory conferences, and guest presenting at an energy law class at the University of California at Berkeley.

Part of our policy function involves frequently interacting with state regulators to provide information and educational materials about the voluntary renewable energy market and help them make informed decisions on issues that affect clean energy in their state. In 2013 CRS was active in a number of states, and CRS Executive Director Jennifer Martin presented expert witness testimony in Arizona and Missouri on the role of solar energy in voluntary and RPS markets and green power program design.

We were engaged throughout the year submitting comments and participating in ongoing discussions with a broad set of stakeholders over guidance for greenhouse gas accounting. These activities included active participation in technical working groups, organized by the

World Resources Institute, addressing greenhouse gas accounting for electricity purchases, and engaging with both the Carbon Disclosure Project and The Climate Registry on similar issues. Our goal for our carbon accounting work is to support systems that accurately reflect the emissions associated with electricity use, and to recognize the benefits created by organizations that make meaningful commitments to clean power through clear and transparent emissions accounting practices.

CRS was also active in dozens of public processes and interactions with other sustainability organizations and government agencies to promote the use of sustainable energy, including the California Air Resources Board and California Energy Commission, the U.S. Green Building Council, the U.S. Energy Information Administration, and several state public utilities commissions, among many others.

Technical Assistance

One of the most important ways CRS staff shape market design and policy is by providing assistance to governments, the private sector, and NGOs working on clean energy and climate issues. Throughout 2013 we provided technical and policy assistance in a variety of areas, including greenhouse gas accounting, legal, regulatory and market design issues affecting renewable energy markets, corporate sustainability, and policy design. These are a few highlights from our work in these areas in 2013.

Department of Defense

CRS completed a contract with Bay Area Economics for the U.S. Department of Defense (DoD), on a lifecycle carbon calculation for buildings owned and managed by the DoD. Our work for the report, "Demonstrating the Environmental & Economic Cost-Benefits of Reusing DoD's Pre-World War II Buildings," identified the lifetime greenhouse gas benefits of improving building design and efficiency upgrades for DoD's existing building stock. We also included the supply chain effects of construction materials as well as the energy use and carbon impacts of the building scenarios over a 30-year period.

Tracking Emissions Associated with Energy Serving Load in the RGGI States: a Feasibility Study

The Regional Greenhouse Gas Initiative (RGGI) is a cap and trade program on the electricity sector for nine states in the northeast U.S. A significant portion of the electricity consumed in these states is imported, which is not captured under the current carbon cap and trade program. This report, jointly written with the Regulatory Assistance Project, assesses the feasibility of capturing electricity imports under the cap and trade program. The paper explores the capacity of the Generation Attribute Tracking System in the PJM renewable energy tracking system and New England's Generation Information System to assist regional regulators in capturing emissions from electricity imports, with several key findings and recommendations

The Legal Basis for Renewable Energy Certificates

This whitepaper, published in June 2013, provides a summary of the legal and regulatory definitions and functions of RECs in the U.S. A key finding is that there is a strong legal basis for the use of renewable energy certificates as instruments that represent the attributes of renewable electricity generation, and that existing laws, regulations, and court cases support the use of these instruments to track and document the trading and use of renewable electricity.

China Sustainable Energy Program

In 2012, CRS continued its relationship with the Regulatory Assistance Project in managing the long-running efforts of the China Sustainable Energy Program to make renewable energy a significant component of China's national energy system.

CRS manages the China Sustainable Energy program staff and contractors, and in 2013 completed projects ranging from examining transmission loss rates in China, to reporting on U.S. electricity curtailment policies, and policies addressing the use of biomass as a thermal energy fuel. Program staff traveled to China in May and October 2013,

and held meetings with the China Electric Power Research Institute, State Grid Energy Research Institute, and others to discuss renewable energy grid integration, wind integration studies and modeling, renewable energy quotas, dispatch order, and energy storage.

Education

As a small organization with an ambitious mission, we believe strongly that part of our agenda should be to offer educational resources to those who want to learn more about renewable energy and strategies for reducing our impact on climate change. We do this in a number of ways: by providing introductory sessions on renewable energy and carbon offsets at our annual Renewable Energy Markets Conference, offering over a dozen public educational webinars throughout the year, including in-depth resources in a "Learn" section on our website, co-authoring the report "Guide to Purchasing Green Power" with the U.S. EPA, U.S. Department of Energy and the World Resources Institute, and hosting the Buy Clean Energy (www.buycleanenergy.org) website that has resources for learning about and purchasing green power. We believe that the more people understand about clean energy and its availability no matter where you live or work, the greater the chance we have at increasing support for transitioning to a clean energy–driven economy.

LOOKING AHEAD

There are many substantial challenges to achieving our clean energy and climate goals. In 2014, CRS's strategies to meet these challenges are to accelerate the contribution of the private sector to clean power development through the Green-e programs, and to expand our initiatives in education, technical assistance, and policy guidance. We look forward to deepening collaborations with our industry, NGOs, and policy-sector partner organizations in pursuit of our mutual goal of creating a clean energy economy.

Center for Resource Solutions creates policy and market solutions to advance sustainable energy.

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Version 1.1, **Updated** January 2, 2014